

CLAIM SET AS AMENDED:

1. (Currently Amended) A buffer formed between a substrate and a nitride semiconductor as a device material to be formed for constituting a device structure on said substrate, comprising:

a plurality of first layers made of a nitride semiconductor containing an impurity at a concentration of $1.2 \times 10^{20} \text{ cm}^{-3}$ - 10^{18} cm^{-3} or more and a plurality of second layers made of a nitride semiconductor containing no impurity, the first and second layers being laminated alternatively on each other and formed on the substrate to form a superlattice structure, and each of the second layers having a thickness substantially equal to four times a thickness of each of the first layers.

2. (Currently Amended) A buffer as claimed in claim 1 wherein:

the thickness of each of the first layers is substantially equal to 20 nm, and the thickness of each of the second layers is substantially equal to 80 nm, and

a concentration of the impurity contained in a nitride semiconductor for forming said first layer is 10% or less.

3. (Previously Presented) A buffer as claimed in any one of claims 1 and 2 wherein:

said impurity is Si (silicon), C (carbon), Mg (magnesium), or O (oxygen).

4. (Previously Presented) A buffer as claimed in any one of claims 1 and 2 wherein:
a nitride semiconductor for forming said first layer or said second layer is a three-five nitride semiconductor.

5. (Previously Presented) A buffer as claimed in claim 3 wherein:
a nitride semiconductor for forming said first layer or said second layer is a three-five nitride semiconductor.

6. (Previously Presented) A buffer as claimed in any one of claims 1 and 2 wherein:
said substrate is made from Si (silicon), SiC (silicon carbide), Al₂O₃ (sapphire), or GaAs (gallium arsenide).

7. (Previously Presented) A buffer as claimed in claim 3 wherein:
said substrate is made from Si (silicon), SiC (silicon carbide), Al₂O₃ (sapphire), or GaAs (gallium arsenide).

8. (Previously Presented) A buffer as claimed in claim 4 wherein:
said substrate is made from Si (silicon), SiC (silicon carbide), Al₂O₃ (sapphire), or GaAs (gallium arsenide).

9. (Previously Presented) A buffer as claimed in claim 5 wherein:

said substrate is made from Si (silicon), SiC (silicon carbide), Al₂O₃ (sapphire), or GaAs (gallium arsenide).

10. (Withdrawn - Currently Amended) A process for the production of a ~~low dislocation~~ buffer formed between a substrate and a nitride semiconductor as a device material to be formed for constituting a device structure on said substrate, comprising:

a first step for forming either of a first layer made of a nitride semiconductor containing an impurity at a concentration exceeding a doping level or a second layer made of a nitride semiconductor containing no impurity;

a second step for forming either layer of said first layer and said second layer, which has not yet been formed by said first step on the layer, which has been formed by said first step; and

said first step and said second step being alternately repeated a predetermined number of times to laminate said first layer alternately with said second layer on the substrate at the predetermined number of times to form a superlattice structure.

11. (Withdrawn - Currently Amended) A process for the production of a ~~low dislocation~~ buffer as claimed in claim 10 wherein:

a concentration of an impurity contained in a nitride semiconductor for forming said first layer is substantially 1-% or more.

12. (Withdrawn - Currently Amended) A process for the production of a ~~low~~
~~dislocation~~ buffer as claimed in any one of claims 10 and 11 wherein:

said impurity is Si (silicon) , C (carbon) , Mg (magnesium) , or O (oxygen).

13. (Withdrawn - Currently Amended) A process for the production of a ~~low~~
~~dislocation~~ buffer as claimed in any one of claims 10 and 11 wherein:

a nitride semiconductor for forming said first layer or said second layer is a three-five
nitride semiconductor.

14. (Withdrawn - Currently Amended) A process for the production of a ~~low~~
~~dislocation~~ buffer as claimed in claim 12 wherein:

a nitride semiconductor for forming said first layer or said second layer is a three-five
nitride semiconductor.

15. (Withdrawn - Currently Amended) A process for the production of a ~~low~~
~~dislocation~~ buffer as claimed in any one of claims 10 and 11 wherein:

said substrate is made from Si (silicon), SiC (silicon carbide), Al₂O₃ (sapphire), or
GaAs (gallium arsenide).

16. (Withdrawn - Currently Amended) A process for the production of a ~~low~~
~~dislocation~~ buffer as claimed in claim 12 wherein:

said substrate is made from Si (silicon), SiC (silicon carbide), Al₂O₃ (sapphire), or GaAs (gallium arsenide).

17. (Withdrawn - Currently Amended) A process for the production of a ~~low~~ ~~dislocation~~ buffer as claimed in claim 13 wherein:

said substrate is made from Si (silicon), SiC (silicon carbide), Al₂O₃ (sapphire), or GaAs (gallium arsenide).

18. (Withdrawn - Currently Amended) A process for the production of a ~~low~~ ~~dislocation~~ buffer as claimed in claim 14 wherein:

said substrate is made from Si (silicon), SiC (silicon carbide) , Al₂O₃ (sapphire) , or GaAs (gallium arsenide).

19. (Previously Presented) A device provided with a buffer, comprising:
said buffer being prepared by forming a device structure on the buffer as claimed in any one of claims 1 and 2 with the use of a nitride semiconductor as a device material.

20. (Previously Presented) A device provided with a buffer, comprising:
said buffer being prepared by forming a device structure on the buffer as claimed in claim 3 with the use of a nitride semiconductor as a device material.

21. (Previously Presented) A device provided with a buffer, comprising:

said low dislocation buffer being prepared by forming a device structure on the buffer as claimed in claim 4 with the use of a nitride semiconductor as a device material.

22. (Previously Presented) A device provided with a buffer, comprising:

said buffer being prepared by forming a device structure on the buffer as claimed in claim 5 with the use of a nitride semiconductor as a device material.

23. (Previously Presented) A device provided with a buffer as claimed in claim 19

wherein:

a nitride semiconductor that comes to be a device material for constituting said device structure is a three-five nitride semiconductor.

24. (Previously Presented) A device provided with a buffer as claimed in claim 20

wherein:

a nitride semiconductor that comes to be a device material for constituting said device structure is a three-five nitride semiconductor.

25. (Previously Presented) A device provided with a buffer as claimed in claim 21

wherein:

a nitride semiconductor that comes to be a device material for constituting said device structure is a three-five nitride semiconductor.

26. (Previously Presented) A device provided with a buffer as claimed in claim 22 wherein:

a nitride semiconductor that comes to be a device material for constituting said device structure is a three-five nitride semiconductor.

27. (Previously Presented) A buffer as claimed in claim 1, wherein a threading dislocation density is substantially equal to $5 \times 10^7 \text{cm}^{-2}$.